

Activating Jewish Learners: Positioning Youth for Persistent Success in Jewish Learning and Living

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What can Jewish education learn from science education? In this chapter, the first of two chapters by learning scientists who focus on science education, Rena Dorph and Christian Schunn draw on their theory of “science learning activation” to make the case for a parallel theory of “Jewish learning activation.” According to this theory, successful learning happens when one particular learning experience enables and motivates the learner to undertake and succeed in the next learning experience. Developing the capacity to move from one learning experience to subsequent learning experiences, within a particular domain, is what they mean by “science learning activation.” Likewise, “Jewish learning activation” can serve as a goal for Jewish learning experiences over and above the specific knowledge or skills that a participant might acquire.

Introduction

A striking feature of the body of research on the impact of Jewish education is that much of it employs behavioral indicators in adulthood (rather than cognitive or affective indicators) as the outcome measures by which the effectiveness of Jewish learning experiences that occur during youth are judged. For example, Steven Cohen¹ notes that attending day school has a positive (albeit quite modest)

* Special thanks to our colleagues Kevin Crowley (The Learning Research and Development Center, University of Pittsburgh) and Matthew Cannady (The Lawrence Hall of Science, University of California, Berkeley) who work with us in the Science Learning Activation

correlation with four indicators that he examined (inmarriage, observance, affiliation, and a feeling of belonging). The same study also notes that some dosages of supplementary school (in particular the once-a-week format) may actually have a negative impact on these indicators. Cohen's most promising finding: participation in three informal educational experiences (including camp, youth group, and visiting Israel) during one's teen years actually surpasses even the impact of day school.

The assumption underlying these claims is that learning experiences influence youth in a way which would manifest in behaviors when they are adults, related to marriage, observance, synagogue affiliation, and belonging. However, there is no clear theory or chain of evidence to help us understand why that assumption is appropriate or what the mechanisms are that connect early learning experiences with complex adult behaviors. While these and other sociological studies' findings offer interesting fodder for consideration, they may have received more attention than they ought to and have been misinterpreted to mean more than they should because there is a paucity of alternatives.

What is missing? The field of Jewish education lacks a body of research that allows us to systematically and empirically examine the causality and underlying mechanisms of relationships between learning experiences, proximal learning outcomes, and more distal impacts. More specifically, the field lacks a learning theory that provides a conceptual framework for describing how Jewish content knowledge, skill sets, and ritual practices are learned through both intentionally designed and naturally occurring experiences; theoretically grounded notions of what "success" looks like and the standards that would embody that vision; agreement on what counts as evidence of learning; rigorous, scalable assessments that can cut across learning experiences; and a research agenda that would enable us to develop the frameworks, tools, and studies that would provide us with anything better.

In the face of the correlational and behaviorally focused existing findings and absent a body of research to help us understand the reasons we found them, this chapter addresses some critical questions:

1. How does/could/should the field of Jewish education conceptualize consequential outcomes for Jewish learning experiences?

Lab; they are our co-authors on writing related to this in science. We credit them as co-authors of the aspects of this chapter that relate to science learning activation.

1 Steven M. Cohen, *A Tale of Two Jewries: The "Inconvenient Truth" for American Jews* (Jewish Life Network/Steinhardt Foundation, 2006).

- a. What do we mean by persistent engagement Jewish living and learning or positive Jewish identity?
- b. How can we think about the learning that students do and the effects that that learning has on them, on their self-understandings, on their lives?
2. What set of Jewish learning outcomes—dispositions, practices, and knowledge—positions, empowers, and enables young people to engage in Jewish learning and living more frequently, in more settings, and with greater success across their lives?
 - a. What enables persistent engagement in Jewish learning and living in the twenty-first century?
 - b. What experiences support youth to develop positive Jewish identities?

This chapter responds to these questions by offering a theoretical framework for the substance and function of an outcome construct called *Jewish learning activation* that extrapolates from the work that we have done related to science learning. Analogies and inferences drawn from them are necessarily inductive rather than deductive; however, analogies are often a productive source of inspiration in all areas of academia. First, we provide a brief synopsis of the work-to-date related to *science learning activation*. Next, we consider the *Jewish learning activation* analog and the implications of this framework for designing and evaluating Jewish learning experiences. We conclude the chapter by discussing implications for a Jewish learning research agenda that is grounded in this framework.

The Analogy of Jewish Learning to Science Learning

How is Jewish learning like science learning? Before we delve into the specifics of the construct of Jewish learning activation and its implications, it may be helpful to consider the reasons, possibilities, and limits of the analogy.

- *The enterprises themselves:* Both Jewish tradition and science seek to provide explanations for natural and physical phenomena through a process of examining evidence, argumentation, and meaning making. They both seek to understand the origins and place of human beings in the world. Although the exact phenomena being examined, the typical sources and types of evidence, and the rules of discourse have differences, there are many parallels across the enterprises.
- *The learning process:* Both Jewish learning and science learning have curiosity, questioning, inquiry, social support, and texts as critical drivers and processes of the overall learning experience.

- *The learning outcomes:* The short-term outcomes we seek to achieve have many parallels and overlaps. That is, we believe that both Jewish and science education seek to develop a combination of dispositions, practices, and knowledge within the learner that drive toward proximal successes. This hypothesis is the crux of the discussion of the remainder of this chapter.
- *The role of identity:* Both science educators/funders and Jewish educators/funders, believe that the development of a (science/Jewish) identity or an identification with a (scientific/Jewish) community is a critical aspect of one's self-concept on the path toward positive and lifelong engagement with the subject.
- *The desired long-term impact:* On the one hand, both the scientific and Jewish communities want to create educational opportunities that enable some individuals to become professionals in the field—professional scientists (science researchers, science teachers) and Jewish leaders (scholars of Jewish studies, teachers of Jewish studies, lay or professional leaders of Jewish institutions). On the other hand, the majority of efforts of both science education and Jewish education is about supporting the development of a (scientifically/Jewishly) literate society or community. Literacy in this context means that every citizen will appreciate that ways of thinking, reasoning, and values of the disciplinary (science/Jewish) community and apply them to their daily lives and communal/societal participation.

The Case of Science Learning Activation

The Science Learning Activation Lab (the Lab) is a multi-institutional research collaborative² dedicated to understanding the malleable factors associated with persistent success in science learning and pursuit of STEM³ careers and, in turn, supporting learning experience design.⁴ The work of the Lab responds to the need to build a theory that explains both short- and long-term effects in science learning. Expanding on recent advances in science education,

2 The Lawrence Hall of Science at the University of California, Berkeley; The Learning Research and Development Center at the University of Pittsburgh, and SRI.

3 STEM is the acronym for science, technology, engineering, and mathematics.

4 The Science Learning Activation Lab engages in multiple, concurrent lines of research. More information about design and methodology associated of these various studies can be found on the Lab's website, www.activationlab.org.

cognitive and social psychology, and socio-cultural studies, Lab researchers propose a construct called *science learning activation* and a theoretical framework that describes the characteristics, function, and impact of this construct. We hypothesize that a new construct called *science learning activation*⁵ is one such critical factor. We define science learning activation as the combination of dispositions, practices, and knowledge that enables success in proximal science learning experiences and are in turn influenced by this success (i.e., participate in a positive feedback loop over time). We refer to the elements of this combination of dispositions, practices, and knowledge as *dimensions* of activation.

Our conceptualization of science learning activation focuses on what the learner consistently carries from one experience to the next (dispositions, practices, and knowledge) as opposed to what is less consistently carried from one experience to the next (e.g., particular physical resources, personal relationships). *Dispositions* refer to attitudes and beliefs about the self vis-à-vis various aspects of learning science content and engaging in science practices. *Practices* refer to skills and abilities that an individual draws upon as resources to solve science-related problems and scenarios in productive ways. *Knowledge* refers to the (explicit, declarative) understanding of science phenomena, concepts, theories, processes, and social resources that are used together with scientific practices to engage in scientific sense making and solve science-related problems and scenarios in productive ways. Further, this conceptualization focuses on *proximal science learning experiences*, that is, the most temporally proximate learning experience an individual has (e.g., their next science class, next visit to a science center, next time they do a science activity at home, next time they participate in an afterschool science club) as opposed to the current or long-distance experiences.

Extensive literature reviews and empirical research have revealed four dimensions (or aspects) of *science learning activation* each of which constitutes useful set of personal resources that an individual carries from one learning experience to the next:

1. *Fascination* with natural and physical phenomenon (emotional and cognitive attachment/obsession with science topics and tasks);

5 Rena Dorph et al., "How Science Learning Activation Enables Success for Youth in Science Learning," *Electronic Journal of Science Education* 20, no. 8 (2016): 49–85; Rena Dorph et al., "Crumpled Molecules and Edible Plastic: Science Learning Activation in Out-of-School Time," *Afterschool Matters* 25 (Spring 2017): 18–28; Rena Dorph et al., "Science Learning Activation: Positioning Youth for Persistent Success in Science Learning, Literacy, and Careers" (presentation, American Education Research Association Annual Meeting, San Francisco, CA, 2013); Rena Dorph et al., "Activating Young Science Learners: Igniting Persistent Engagement in Science and Inquiry" (structured poster session, American Education Research Association Annual Meeting, Vancouver, BC, Canada, 2012).

2. *Valuing* of science (understands various intersections of self with science knowledge and skills and places value on those interactions within their social context);
3. *Competency beliefs* about self in science (perceives one's self as capable of successfully engaging in science activities and practices); and
4. *Scientific sensemaking* (engages with science-related content as a sensemaking activity using methods generally aligned with the practices of science).

These resources impact the chance that an individual will have a successful learning experience. We operationalize “success” as four elements that designers of science learning experiences hope to impact through their interventions *and* that function as we describe further below. These elements of success include: (1) choosing to participate in science learning opportunities; (2) experiencing positive engagement (affective, behavioral, and cognitive) during science learning experiences; (3) perceiving oneself as successful during science learning experiences; and (4) meeting science learning goals during these experiences.

A successful learning experience supports the individual to develop higher levels of the dimensions of science learning activation, which, in turn, will increase the chances of success the next time a learner bumps into a potential science learning experience. This positive feedback loop—from science learning activation to success to science learning activation—is the heart of our framework. Learning experiences that are more likely to lead to positive changes in science learning activation can resonate forward and make it more likely that youth follow pathways to science. Conversely, poor experiences can lead to declines in science learning activation that undermine future success and thus make it more difficult to follow a science pathway.

In order to test the hypotheses embedded in this theory, we have developed measures of each dimension and each success element and then empirically investigated whether the hypothesized dimensions of activation indeed both predict successes and further increase as the result of successes. Thus far, our empirical studies of youth have demonstrated the relationship among the four dimensions of science learning activation and success in science learning experiences.⁶ The studies, using complex statistical models that are carefully controlled for learner demographics and prior achievement, found positive connections between each dimension and one or more of the forms of success.

6 Dorph et al., “How Science Learning Activation Enables,” 49–85; Dorph et al., “Crumpled Molecules and Edible Plastic,” 18–28; Dorph et al., “Science Learning Activation”; Dorph et al., “Activating Young Science Learners.”

The studies also found that the success variables were also predictive of increases in levels of the dimensions of science learning activation. For example, fascination is strongly correlated with choice preferences while scientific sensemaking is correlated with content learning.⁷ These findings help illuminate the mechanism by which science learning activation could have both short and long term predictive power. By supporting success (choice, engagement, and learning) in proximal learning experiences, science learning activation provides momentum—a ramping up effect—that supports persistent engagement and success in science learning over time. It also offers an explanation for the opposite effect of decreased momentum, lack of persistence, and decreased success in science learning over time.

The Jewish Learning Analog

So, what is the analog for Jewish learning? What set of dispositions, practices, and knowledge position a young person for success in Jewish learning and living? What does “success” mean in a Jewish learning framework? Clearly some aspects must be different. While the science learning activation framework we described was built on a wealth of prior empirical studies, researcher insight, and practitioner input, the ideas here are constructed based on our extrapolation of that work to the Jewish learning context. Accordingly, the ideas we present for what must be adapted are a hypothesis rather than a tested theory. Much effort would be required to investigate these assertions further. We describe an approach for such a research agenda later in this chapter.

Analogous to the science learning context, we define *Jewish learning activation* as the combination of dispositions, practices, and knowledge that enables success in proximal Jewish learning and living experiences and are in turn influenced by these successes. We refer to the elements of this combination of dispositions, practices, and knowledge as *dimensions* of activation. Also similar to the science learning context, our conceptualization of Jewish learning activation focuses on what the learner consistently carries from one experience to the next (dispositions, practices, and knowledge) as opposed to what is less consistently carried from one experience to the next (e.g., particular physical resources, personal relationships). *Dispositions* refer to attitudes and beliefs about the self vis-à-vis various aspects of learning Jewish content, engaging in

7 Dorph et al., “How Science Learning Activation Enables,” 49–85.

Jewish practices, and belonging to a Jewish community and the Jewish people. *Practices* refer to skills and abilities that an individual draws on as resources to engage in Jewish learning and living in meaningful ways. *Knowledge* refers to the (explicit, declarative) understanding of Jewish concepts, traditions, values, and social resources that are used together with Jewish practices (including but not limited to ritual practices) to engage in Jewish living and community in productive ways.

Like the science learning context, this conceptualization focuses on *proximal Jewish learning experiences*. At the same time, we broaden this idea a bit within the Jewish context to include proximal Jewish living experiences, as well. In particular, in the Jewish context we are looking for both enabling success in temporally proximate learning experiences an individual has (e.g., next Jewish learning opportunity; next time they visit a Jewish museum; next time they participate in Jewish learning at home; next time they participate in school, religious school, or another afterschool program) as well as in temporally proximate Jewish living experiences (e.g. next time they go to synagogue; next time they participate in a Jewish home ritual; next time they go to a lifecycle event). Though these are not primarily learning experiences, these living experiences also involve a reinforcing cycle of activation and proximal success. As in science, proximal experiences are those that are the next one they have, as opposed to the current one they are in or the long-distance ones they will eventually have as successive proximal experiences are the path from the current experience to the long-term.

We have identified six⁸ dimensions that we think have high likelihood of functioning the way the dimensions of science learning activation do for science learning within a Jewish learning activation framework:

1. *Fascination* with Jewish culture, tradition, and practice (emotional and cognitive attachment/obsession with Jewish topics and tasks);
2. *Valuing* of Jewish culture, tradition, and practice (understands that Jewish knowledge, practice, community offer meaning, joyful structures, and ways of relating to the divine, to self, and to others);

8 Note that the evolution of the science learning activation work involved the Lab testing more than the current four dimensions and amassing evidence for those that persisted through these investigations. Hypothesizing and testing more dimensions to test than those that actually stick is a part of the research effort, as the empirical efforts naturally winnow down non-predictive dimensions.

3. *Competency beliefs* about self as a Jew (perceives one's self as capable of/ having the skills to successfully engage in Jewish learning and living);
4. *Interpretive thinking* (understands that there is meaning beyond the literal; knows how to interpret texts and cultural artifacts in order to access deeper meaning);
5. *Sense of belonging* (perceives one's self as belonging to/among the Jewish people).
6. *Spiritual stance* (appreciates the existence of the spirit/soul and its relationship to a Divine or creative source; recognizes ways of connecting with and nurturing the spirit/soul).

According to the activation framework, having high levels of each dimension of Jewish learning activation should enable an individual to generally experience success in proximal Jewish learning and living opportunities. Just as importantly, in order to lead to long-term outcomes, those successes, in turn, should support the individual to develop higher levels of each dimension.

The obvious methodological question here is, how was this list generated? We approached this task through the following thought process. First, we carefully considered the character, role, and function of each of the dimensions of science learning activation within that framework. Next, we engaged in a thought exercise of extrapolating these dimensions to the Jewish context, which led to the first four dimensions listed above.

Once we completed this extrapolation process, we considered the aspects particular to Jewish learning and living that might play an important “activating” role that were not accounted for by this extrapolation process. The fodder for this thinking emerged from a few sources: (1) literature on Jewish education that we have read in service of the efforts of one of the authors (Dorph) to design Jewish learning experiences; (2) observations of a variety of Jewish learners and learning experiences, some of which we have designed and some in which the children and their friends of one of the authors (Dorph) have participated; and (3) reflection on conversations with Jewish educators and learners in a variety of settings. This process yielded dimensions 5 and 6 listed above. Our thinking about these two dimensions—*sense of belonging* and *spiritual stance*—has also been influenced by work in science learning. More specifically, the dimension of *sense of belonging* is extrapolated from an outcome construct used in environmental education known as “sense of place.” The dimension of *spiritual stance* is inspired by a dimension we call “innovation stance” that is a

dimension of a construct that casts a slightly wider net—*STEM* (rather than science) *learning activation*.⁹

Through a similar process, we approached another, equally important task: thinking through how success in Jewish learning (and living) could be conceptualized. Extrapolating from the *science learning activation* framework, we propose four elements: (1) choosing to participate in Jewish learning, practice, and/or community; (2) experiencing positive engagement (affective, behavioral, and cognitive) during Jewish learning and living; (3) perceiving oneself as successful within Jewish learning experiences, practice, and/or community and (3) meeting Jewish learning and living goals during these experiences.

In order to bring these dimensions of activation and success elements into sharper focus, consider examples of each that we have observed or extrapolated through interactions with children and their families who participate in the afterschool Jewish learning programs that we have been involved in designing or advising. These examples are intentionally related to children during their elementary school years, as it is often most difficult to identify and capture examples in young children. Subsequent research could involve systematic investigation of these variables across multiple ages and contexts and offer opportunity for thorough analysis and presentation of such exemplars. In this chapter, we have simply provided brief examples in table form below.

Table 1 Examples of Dimensions of Jewish Learning Activation

Dimension of Activation	Example
Fascination	A mother takes her kids to a paint your own pottery stores. The kids look around at the options for items to paint and are having a difficult time deciding what to choose, until they see the area with the <i>kiddush</i> cups and <i>mezuzot</i> . Quickly, one child selects a <i>kiddush</i> cup and the other child selects a <i>mezuzah</i> . They agree that they will each paint one of the items, but to share them both at home.
Values	A second-grade boy becomes the catalyst for family engagement in Jewish ritual participation in his home. He routinely brings home the Jewish objects (e.g., <i>tzedakah</i> box, <i>hagaddah</i> , <i>hanukkiyah</i>) that he has made in his Jewish afterschool program, explains to his family how to use them, and requests that he and his family use them together.

9 Rena Dorph and Matthew A. Cannady, “*Making the Future: Promising Evidence of Influence*,” a report submitted to Cognizant Technologies by The Research Group, The Lawrence Hall of Science, University of California, Berkeley, May 2014.

Competency Belief	A first-grade girl asks her mother to come to her public school classroom and tell the kids in her class about Passover. The mother agrees, enthusiastically, and asks the teacher if this would be possible. The teacher immediately agrees and tells the mom that the best time would be Tuesday afternoon. The mother replies, "Unfortunately, I'm not available Tuesday afternoon." The girl's fourth-grade sister immediately says, "Don't worry, <i>Ima</i> , I can come into the first-grade class and present <i>Pesach</i> to them."
Interpretive Thinking	A group of eight- and nine-year-olds write their own <i>midrash</i> (interpretation or commentary on Biblical text) exploring how Queen Esther became an orphan, how she felt about not having parents, and the role that her orphan status played in <i>Megillat Ester</i> . The children then work with a drama specialist at their afterschool program to create a <i>Purim shpiel</i> (play) based on their <i>midrash</i> .
Sense of Belonging	A ten-year-old girl visits Israel for the first time. While she is shopping in a grocery store, she marvels at the amount and variety of kosher meat products available in the grocery store. She excitedly says, "Israel is a place that is made for us." "What do you mean by 'us'?" her mother asks. " <i>Ima</i> , you know what I mean, Jewish people," she replies.
Spiritual Stance	On a Jewish family retreat, participants sit around a campfire singing songs with lots of goofing off and rowdy actions. As soon as the song leader begins to play one of the prayers (<i>U'fros aleinu sukkat shlomecha</i>) that the kids are used to singing every evening as part of their service at closing circle, the mood changes. The kids settle down, they focus on the words, they sing them sweetly and with intention. The same people, same place, same song leader, same guitar moves from the profane to the sacred, in a split second—the singing becomes a spiritual expression and the connection to the divine, palpable. The kids sing sweetly: "Shelter us, beneath your wings, oh, <i>Adonai</i> ; guard us from all harmful things, oh, <i>Adonai</i> ; keep us safe, throughout the night, till we wake with morning light; guard us <i>eli</i> wrong from right, oh, <i>Adonai</i> ; Amen, Amen. . . ."

Table 2 Examples of Elements of Success in Jewish Learning and Living

Success Elements	Example
Choice	A mother comes to pick up her kindergartener at school at the end of the school day during <i>hol hamoed Pesach</i> . The mother walks into the classroom during the last few minutes of the day while a birthday celebration is underway for one of her child's classmates. The mother notices that there is a cupcake sitting in front of her child and says, "Before you eat the cupcake I want to remind you that its <i>Pesach</i> and the cupcake is <i>hametz</i> . It's your choice to decide if you want to eat it or not." The six-year-old thinks about it for a minute and then says, "No, I won't eat the cupcake since we don't eat <i>hametz</i> on <i>Pesach</i> , but will you get me another cupcake when <i>Pesach</i> is over—and can I have a different snack now?"
Engagement	A parent arrives at 5:30 p.m. to pick up her child at her Jewish afterschool program. Her seven-year-old son is sitting at a table playing a Hebrew language card game with other kids in the program. His mother asks him to wrap it up and grab his things so they can go home. "Is it time to go already?" he asks. "I wish I could stay and play longer."

Perceived Success	An eleven-year-old girl participates in <i>Birkat Hamazon</i> after Shabbat dinner. After the meal is over and the guests have gone home, the girl says to her mother, “Did you notice that I finally learned <i>Birkat Hamazon</i> ? I was able to follow along and sing the whole thing tonight!”
Learning	<p>Several fourth graders in the program decided they wanted to learn to chant Torah. One day, after hearing one of the girls chant a <i>pasuk</i> (sentence) from the week’s Torah portion, the teacher said, “Wow, you guys worked SUPER hard today—you each learned a whole <i>pasuk</i> AND we did a bunch of review.”</p> <p>The girl, in turn, responded: “I mean, it was a really easy <i>pasuk</i> though.” The teacher replied: “A really easy <i>pasuk</i>! Just being able to say that sentence means that you are comfortable enough with reading Hebrew AND with the trope, that there even exist ‘really easy’ <i>p’sukim</i> (sentences). Six months ago, I said, you wouldn’t have known a thing about ‘easy <i>p’sukim</i>’ and today you’re saying you didn’t work that hard?! Clearly, your efforts all year have paid off!”</p>

It is worth noting that some of the examples presented above simultaneously include evidence of more than one dimension of activation and/or success. There are several reasons for this. First, qualitative descriptions of lived experiences are rich with complexity and nuance such that a compelling illustration of a phenomena may necessarily include aspects of other simultaneously occurring phenomena. Second, because these dimensions and elements are conceptually distinct at the same time that they are interactive with one another—influencing and being influenced by each other—their enactment is necessarily overlapping. Finally, theoretically, we would expect co-occurrence of these dimensions and elements, so finding evidence of them within the same example, and/or having the same example provide evidence for multiple aspects is further evidence of the theory as conceptualized.

As we step back and consider the functional theory of activation through the lens of the Jewish learning context, we also realize that a few additional factors must be considered. One factor is how we articulate our distal outcomes—that is the long-term end-game that we are pursuing. We extrapolate from the science learning case and suggest that there are two distal outcomes that are important to pursue: (1) Jewish literacy and (2) persistent engagement in Jewish learning and living. It will be important that we can measure those in ways that are meaningful in the twenty-first century rather than assuming that behavioral proxies like the ones Cohen¹⁰ uses are the right fit for this framework.

10 Cohen, *A Tale of Two Jewries*.

A second factor is the ancestral and historical “baggage” that the learner also carries with him/her and plays a significant role in shaping his/her dispositions, practices, and knowledge. While this is also the case in the science context—parental and cultural beliefs about science dramatically influence and shape an individual’s attitudes toward science learning—it is even more so in the Jewish context. Attitudes toward being Jewish, toward heritage language learning, and toward religious practice and beliefs about God and Jewish tradition are all contextually complex and emotionally laden, and all play a role in shaping an individual’s level of activation across all dimensions. Thus, a theory of Jewish learning must pay close attention to the personal and socio-cultural context in which learning is situated. In this case, the functional theory of Jewish learning activation must account for this “baggage” in order to understand and measure the process by which a learner may develop Jewish learning activation and design learning experiences and environments that are effective at increasing activation.

Implications for Designing Jewish Learning Experiences

Consequential outcomes from early Jewish learning experiences will take place more regularly when we discover which experiences have effects that maintain or grow rather than dissipating. In order to do that, we need to both know what immediate effects are predictive of growing long-term effects, which in turn requires being able to measure them rigorously. The theory described herein suggests that those designing learning experiences could intentionally target Jewish learning activation as an outcome while understanding it as an input as well. Designing Jewish learning experiences for youth could focus on strategic interventions designed to produce immediate effects on the dimensions of activation, with the idea that such immediate effects could launch the iterative process that produces long-term outcomes. Future design efforts could then focus on understanding the specific features of learning experience interventions that support the development of activation.

So, what kinds of learning experiences support the development of Jewish learning activation? Synthesizing across a wide range of input from research, practice, and original empirical data, Lab researchers have compiled a list of several features of learning experiences that have been suggested by researchers to support changes in the conceptual building blocks (e.g. curiosity, interest, persistence, etc.) that underlie the science learning activation dimensions.¹¹

11 Dorph et al., “Crumpled Molecules,” 18–28.

Here, we extrapolate from that list to propose a list of features that have high probability to support the dimensions of Jewish learning activation that we hypothesized above:

- *The learning environment:* goals, materials, accessibility, intellectual richness, expertise.
- *The social affordances:* development & demonstration of expertise, sense of belonging, supportive culture, opportunities to engage in collaborative interpretation of Jewish text and artifacts, interaction with accessible role models.
- *The learning experiences:* relevant, authentic, joyful, immersive, engages learners in interpretive text study and meaningful Jewish practice, offers opportunities to enact Jewish values, offers choice/control/autonomy, offers increasing complexity and opportunities for mastery.

While empirical work designed to understand if and how these features support the development of *science learning activation* is currently only in its early stages, preliminary results indicate that we not only have to pay attention to which features support activation, but we also must pay close attention to other related questions. For example, how/when do these features interact with an individual child to support activation? For whom do different combinations of activation dimensions work in what way? And, under what conditions these features will yield activation. We anticipate that similar questions would apply to the case of Jewish learning as well. For instance, we are noticing gender effects in science activation and are intrigued about similar effects related to Jewish effects.

Accordingly, the design of Jewish learning experiences must be responsive to a broad range of learners. “Jewish education” is used to refer to a diverse collection of learning content and learning environments. At the same time, Jewish knowledge, Jewish skills, and dispositions toward Jewish learning are developed in diverse contexts that span many learner years and involve many formats. Such formats include books, traditional classrooms, various forms of classroom guided experimentation, afterschool programs, summer camps, museum and science center visits, TV programs, the internet, and home learning experiences. Hence, there is wide diversity in quantity and format of Jewish education within both school and out-of-school settings. As a result, children entering a new Jewish learning environment can differ greatly in prior experiences. Similarly, children exiting any given Jewish learning environment can

also differ greatly in what kinds of Jewish learning experiences (especially out-of-school experiences) they will be offered next.

This heterogeneity in incoming and outgoing experiences creates challenges in designing effective Jewish learning opportunities, particularly around the notion of a pathway that resonates and builds on each successive learning experience. Further, these experiences exist within a complex ecosystem of designed, emergent, and accidental Jewish learning opportunities. Some elements of this ecosystem are intentionally designed to enhance connections and coherent pathways across the settings; other elements are not, unintentionally introducing confusion for learners and their families as they seek to make meaning across disparate experiences and options.

Implications for Evaluating Jewish Learning Experiences

This work may also have practical implications for evaluating Jewish learning experiences for several reasons. First, Jewish learning activation is hypothesized to present convenient short-term evaluation targets with meaningful long-term predictiveness. Second, the development of instruments to assess of the dimensions of Jewish learning activation as well as specified success factors would provide scalable measurement tools currently unavailable to evaluators in this field. Further, these efforts offer a framework that is meaningful across learning environments and settings and thus affords the potential for engaging in comparative studies that are impossible in the absence of robust measures of learning. The ability to engage in more systematic and robust evaluation of Jewish learning experiences would support the improvement of those experiences and enhance the impact that they could make.

The promise of utilizing this framework and measures in support of rigorous evaluation research is underscored by relevant work being done by the Lab team to operationalize the framework and instrumentation that the Lab developed for research in ways that are useful in evaluation contexts. This project will enhance the infrastructure for high-quality evaluation of science learning experiences and expand the capacity of small-scale evaluation efforts to collect, analyze, and interpret data, which, in turn will support program improvement. Given that evaluation efforts related to Jewish learning programs are usually quite small in scope and funding and rarely engage teams with sophisticated methodological expertise related to assessment and psychometrics, an analogous infrastructure for evaluating the impact of Jewish learning experiences across environments would be useful.

Implications for Research on Jewish Learning

Developing a research agenda that explores the applicability of this framework in the Jewish learning context would be a very powerful approach to synthesizing and developing an important perspective for the field. We envision that such an agenda would need to begin with an intentional planning phase and include the following elements (at minimum):

- Synthesis of existing research in Jewish and religious learning.
- Qualitative and phenomenological studies of powerful learning outcomes and experiences for youth across multiple ages and stages.
- Retrospective studies of the life histories of individuals who epitomize the types of adult engagement with Jewish learning and living that we idealize as success.
- Development of deep and scalable measures of Jewish learning activation and success and of an understanding the affordances and limitations of measurement strategies.
- Longitudinal studies of youth engaged in diverse Jewish learning experiences.
- Design-based research studies that support the systematic investigation of learning experiences that support Jewish learning activation.

Before embarking on such a research agenda, it is important to understand that the research agenda underway related to science learning activation has been highly resourced—both intellectually and financially. Intellectually, a multi-disciplinary team of researchers and learning experience designers from three institutions developed and drives this agenda. Financially, the initial investment in these efforts was very well capitalized (approximately \$5 million over a three-year period) by a private foundation that launched this work and enabled enough progress to be made so that the agenda is now (for the past one and a half years) funded through multiple federal grants (more than \$2 million over three years) and private sources (more than \$500 thousand over two years) for particular related studies.

No less than such an investment would be required to make significant progress on the comprehensive agenda described above within the Jewish learning context. Although the work done by the Lab related to science could offer a shortcut, it is probable that making progress in the Jewish learning context would require even more extensive financial resources and a longer time horizon given that the field of Jewish learning research provides a far less developed

starting point than the field of science learning. That said, it is not necessary to begin with all of these resources in place, and early work can establish the viability of the overall approach that will then increase confidence in the need for a larger investment. The Lab's work began as a one-year planning effort that was funded by a modest grant from a private foundation. Through a planning process that included extensive literature review efforts and multiple convenings of researchers, designers, and educators, we envisioned an agenda and hatched productive collaboration. Since that time, we have garnered additional support that has enabled us to advance the field of science learning research.

The same is possible for research on Jewish learning. Engaging in productive collaboration and the systematic study of Jewish learning is as important to the future of the Jewish people as the study of science learning is to the future of the United States. The United States has invested both public and private funds into the research and development efforts described above because many believe that the future of our country depends on developing a scientifically literate citizenry, broadening participation in STEM learning and careers, and both inspiring and preparing the cultivation of the next generation of scientists and innovators. There is an analogous case to be made for engaging in the systematic study of Jewish learning. Getting from here (the current state of Jewish education) to there (where we need to be in Jewish learning and teaching) in the twenty-first century will require collective and individual investment in rigorous and systematic study as well as expert learning experience design. The future of the Jewish people depends on creating a Jewishly literate citizenry, broadening participation in Jewish learning and living, and both inspiring and preparing the next generation of Jewish leaders and educators.

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